MICROSENS
fiber optic solutions
a company of the euromicron group

# Entry Line
# Ethernet VDSL Extender
# User's Manual

# Preface

This manual describes how to install and use the Hardened VDSL Ethernet Extender. The Hardened VDSL Ethernet Extender introduced here provides one channel for Ethernet over VDSL.

The Hardened VDSL Ethernet Extender fully complies with IEEE802.3 10Base-T and IEEE802.3u 100Base-TX/FX standards.

In this manual, you will find:

- Product overview
- Features on the Hardened VDSL Ethernet Extender
- Illustrative LED functions
- Installation instructions
- Specifications

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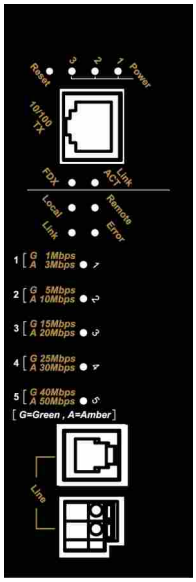
# Introduction

The Hardened VDSL Ethernet Extender provides one channel for Ethernet over VDSL. This Hardened VDSL Ethernet Extender solution is perfectly fitted in the industrial applications or rugged environment.

### Product Overview




### Product Features

- Meets NEMA TS1/TS2 Environmental requirements such as temperature, shock, and vibration for traffic control equipment
- Meets IEC61000-6-2 EMC Generic Standard Immunity for industrial environment
- Operates transparent to higher layer protocols such as TCP/IP
- Ethernet Port: Supports IEEE802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps, full/half-duplex; Auto MDI/MDIX
- VDSL port: Symmetrical on the VDSL, high-speed full-duplex 50Mbps communications link over existing copper telephone line
- One DIP switch for configuring Local (Loc) and Remote (Rmt)
- Ten speeds with speed indicator LEDs on front panel of unit, up to 50Mbps @ about 300meters (984ft.), down to 1Mbps @ about 1,900meters (6,233ft.)
- Operating voltage and Max. current consumption: 0.225A @ 12VDC, 0.113A @ 24VDC. Power consumption: 2.7W Max.
- Power Supply: Redundant 12-30VDC Terminal Block power inputs and 12VDC DC JACK with 100-240VAC external power supply
- Operating temperature ranges from -34℃ to 74℃
- Supports Din-Rail, Panel, or Rack Mounting installation

### Packing List

When you unpack this product package, you will find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to our authorized reseller.

The Hardened VDSL Ethernet Extender

**USER'S MANUAL**

AC to DC Power Adaptor and Power Cable (optional)

# One-Channel Hardened VDSL Ethernet Extender

### Ports

The Hardened VDSL Ethernet Extender provides one TX port and one VDSL port.
For the TX port, it uses RJ-45 connector and auto senses the speed of 10/100Mbps.
For the VDSL port, it uses RJ-11 and Terminal Block connectors and auto senses the speed of 1/3/5/10/15/20/25/30/40/50Mbps.

### VDSL Mode Settings

VDSL mode settings are made very simple by means of a DIP (Dual Inline Package) switch on the top panel of the Hardened VDSL Ethernet Extender.

### DIP switch

There is one pin on the DIP switch for VDSL mode settings. Refer to the table below for more details.

| Loc | Rmt |
|---|---|
| The device operates in local mode | The device operates in remote mode |

## Front Panel & LEDs

### LED Indicators

The LED indicators give you instant feedback on status of the Hardened VDSL Ethernet Extender:

| LEDs | State | Indication |
|---|---|---|
| Power 1<br>Power 2<br>Power 3 | Steady | Power on |
| | Off | Power off |
| Ethernet | | |
| Link/ACT | Steady | A valid Ethernet connection established |
| | Flashing | Transmitting or receiving Ethernet data<br>ACT stands for ACTIVITY |
| | Off | Neither valid Ethernet connection established nor transmitting/receiving Ethernet data |
| FDX | Steady | Ethernet Connection in full-duplex mode<br>FDX stands for FULL-DUPLEX |
| | Off | Ethernet Connection in half-duplex mode |
| Ethernet over VDSL | | |
| 1 | Green | The VDSL port transmitting/receiving at 1Mbps, up to 1900M |
| | Amber | The VDSL port transmitting/receiving at 3Mbps, up to 1800M |
| 2 | Green | The VDSL port transmitting/receiving at 5Mbps, up to 1600M |
| | Amber | The VDSL port transmitting/receiving at 10Mbps, up to 1400M |
| 3 | Green | The VDSL port transmitting/receiving at 15Mbps, up to 1200M |
| | Amber | The VDSL port transmitting/receiving at 20Mbps, up to 1000M |
| 4 | Green | The VDSL port transmitting/receiving at 25Mbps, up to 800M |
| | Amber | The VDSL port transmitting/receiving at 30Mbps, up to 700M |
| 5 | Green | The VDSL port transmitting/receiving at 40Mbps, up to 600M |
| | Amber | The VDSL port transmitting/receiving at 50Mbps, up to 300M |
| Remote | Steady | The device operates in remote mode |
| Local | Steady | The device operates in local mode |
| Error | Steady | Error occurred |
| Link | Steady | A valid VDSL connection established |

# Installation

This chapter gives step-by-step installation instructions for the Hardened VDSL Ethernet Extender.

### Selecting a Site for the Equipment

As with any electric device, you should place the equipment where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

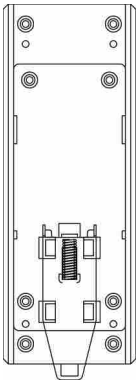
- The ambient temperature should be between -34 to 74 degrees Celsius.
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
- Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes of the equipment.
- The power outlet should be within 1.8 meters of the product.

### DIN Rail Mounting

Fix the DIN rail attachment plate to the back panel of the Hardened VDSL Ethernet Extender.

Installation: Place the Hardened VDSL Ethernet Extender on the DIN rail from above using the slot. Push the front of the Hardened VDSL Ethernet Extender toward the mounting surface until it audibly snaps into place.

Removal: Pull out the lower edge and then remove the Hardened VDSL Ethernet Extender from the DIN rail.



## Connecting to Power

Redundant DC Terminal Block Power Inputs or 12VDC DC Jack:

**12VDC DC Jack**

Step 1: Connect the supplied AC to DC power adapter to the receptacle on the topside of the Hardened VDSL Ethernet Extender.

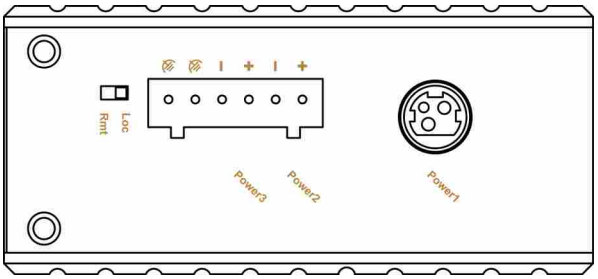
Step 2: Connect the power cord to the AC to DC power adapter and attach the plug into a standard AC outlet with the appropriate AC voltage.

**Redundant DC Terminal Block Power Inputs**

There are two pairs of power inputs can be used to power up this device. You only need to have one power input connected to run the Hardened VDSL Ethernet Extender.

Step 1: Connect the DC power cord to the plug-able terminal block on the Hardened VDSL Ethernet Extender, and then plug it into a standard DC outlet.

Step 2: Disconnect the power cord if you want to shut down the Hardened VDSL Ethernet Extender.




| Power Input Assignment | | | |
|---|---|---|---|
| Power1 | | 12VDC | DC Jack |
| Power2 | + | 12-30VDC | Terminal Block |
| | - | Power Ground | |
| Power3 | + | 12-30VDC | |
| | - | Power Ground | |
| ⏚ | | Earth Ground | |
| DIP Switch Assignment | | | |
| Loc | The device operates in local mode | | |
| Rmt | The device operates in remote mode | | |

# Specifications

| | |
|---|---|
| Applicable Standards | IEEE802.3 10Base-T<br>IEEE802.3u 100Base-TX<br>Ethernet over VDSL |
| Fixed Ports | 1 x 10/100Mbps Ethernet port with RJ-45 connector<br>1 x Ethernet over VDSL port with RJ-11 and Terminal Block connectors |
| Speed<br>10Base-T<br>100Base-TX<br>Ethernet over VDSL | <br>10/20Mbps for half/full-duplex<br>100/200Mbps for half/full-duplex<br>1, 3, 5, 10, 15, 20, 25, 30, 40, 50Mbps |
| Switching Method | Store-and-Forward |
| Forwarding rate | 14,880/148,810pps for 10/100Mbps |
| Cable<br>10Base-T<br>100Base-TX<br>Ethernet over VDSL | <br>2-pair UTP/STP Cat. 3, 4, 5 up to 100m<br>2-pair UTP/STP Cat. 5 up to 100m<br>Cross-over telephone wires |
| LED Indicators | Per Unit (3 LEDs)-<br>Power1, Power2, Power3 |
| | Per Port-<br>RJ-45 (2 LEDs): Link/ACT, FDX<br>RJ-11, Terminal Block (9 LEDs): Remote, Local, Error, Link, 1, 2, 3, 4, 5 |
| Dimensions | 50mm (W) × 110mm (D) x 136mm (H)<br>(1.97" (W) x 4.33" (D) x 5.35" (H)) |
| Weight | 0.8Kg (1.76lbs.) |
| Power | Terminal Block: 12-30VDC<br>DC Jack: 12VDC, External AC/DC required |
| Operating Voltage & Max. Current Consumption | 0.225A @ 12VDC, 0.113A @ 24VDC |
| Power Consumption | 2.7W Max. |
| Operating Temperature | -34°C ~ 74°C (-29°F ~ 165°F) |
| Storage Temperature | -40°C ~ 85°C (-40°F ~ 185°F) |
| Humidity | 10 ~ 95%, non-condensing |
| Safety | UL60950, EN60950, IEC60950 |
| Emissions | FCC Part 15, Class A<br>CE: EN61000-6-2<br>EN61000-6-3 |

| Standards |
| --- |
| ESD Standard (EN61000-4-2) |
| Radiated FRI Standards (EN61000-4-3) |
| Burst Standards (EN61000-4-4) |
| Surge Standards (EN61000-4-5) |
| Induced RFI Standards (EN61000-4-6) |
| Magnetic Field Standards (EN61000-4-8) |
| Voltage Dips Standards (EN61000-4-11) |
| Environmental Test Compliance:<br>Vibration Resistance (IEC60068-2-6)<br>Shock (IEC60068-2-27)<br>Free Fall (IEC60068-2-32) |
| NEMA TS1/2 Environmental requirements for traffic control equipment |

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